

REMARKS

Upon entry of this Amendment, claims 1, 33, 34, 36-41, and 43-61 remain in the Application.

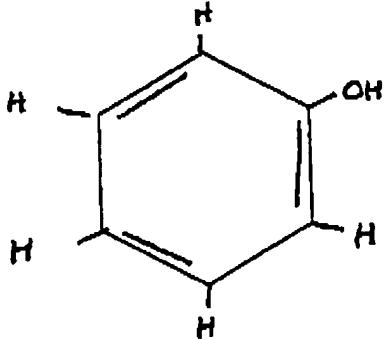
The Office Action of January 28, 2004, has been received and carefully considered. In response thereto, this Amendment is submitted. It is submitted that, by this Amendment, all bases of rejection and objection are traversed and overcome. Reconsideration is, therefore, respectfully respected.

At the outset, the Applicants wish to thank Examiner James Hook for the courtesies extended during the telephone interview April 14, 2004. During this interview, the cited references were discussed and proposed claims were reviewed. No agreement was reached, however, the Applicants' attorney indicated that claims such as those discussed would be presented with detailed arguments in a suitable amendatory response.

Claims 1, 33, 34, 36-41 and 43-61 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Iorio (U.S. Patent No. 5,520,233) in view of Kitamura (U.S. Patent No. 4,701,354). The Examiner contends that the Iorio reference discloses the recited multilayer tube comprising a metal tube, a zinc layer bonded to the metal tube, a surface treatment layer of chromate or phosphate, and a layer 58 that can be placed and considered the first polymeric layer and can be formed of a nylon material together with a second polymeric layer and additional layers if desired. The Examiner indicates that the Iorio reference discloses all of the recited structure with the exception of including phenols, specifically carbolic acid, in the primer layer where the phenol is capable of being sprayed. The Kitamura reference is cited as disclosing the recited plastic coating composition used to coat metal plates that can be formed into tube shapes comprising a zinc coating on a metal plate, a treating layer using phosphoric or chromate acid, a primer layer containing phenols. The primer layer is considered to be sprayable and provides a layer that adheres well to the metal layers and layers of polyamides to allow for better connection between the two. The Examiner concludes that it would have been obvious to one skilled in the art to provide a primer layer in the Iorio reference that includes sprayable phenols such as carbolic

acid to give the primer layer better adhesion properties for connecting polyamide layers to treated metal layers as suggested by Kitamura.

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Iorio in view of Kitamura. The Applicants' invention as set forth in claim 1 is a multilayer tube composed of a metal tube having an outer surface. A zinc layer is bonded to the outer surface of the metal tube and a surface treatment layer is bonded to a zinc layer. The multilayer tube as set forth in claim 1 also includes a phenolic coating capable of spray application. The phenolic coating contains phenols having at least one substituted group (R) wherein R consists of H and OH. Support for phenols of this structure is found in the specification at page 22. It is respectfully submitted that carbolic acid or phenols are known to have the general formula as set forth below:



It is respectfully submitted that the skilled artisan, when discussing carbolic acid, would appreciate that the material is a phenol of this structure. Further support for this assertion is found in secondary sources such as those attached as Appendix A and Appendix B.

The Iorio reference lacks any teaching to suggest a primer layer such as that set forth in claim 1. It is respectfully submitted that the Kitamura reference is directed to a thin coating layer having a thickness of the order of angstroms utilizing a hydroxymethyl substituted phenol applied to the surface of the metal material using a vapor deposition method. It is respectfully submitted that the Kitamura reference lacks any teaching of spray application. The Examiner's attention is directed to Kitamura '345 at column 1, lines 10-23 where it states that it is important that the surface treating agent used in the present invention should have both the hydroxymethyl group and the phenolic hydroxyl group as substituents on the nucleus of the

molecule. It is respectfully submitted that the material utilized in the present invention is a phenol that lacks the hydroxymethyl group required in Kitamura. Additionally, it is submitted that the Kitamura '354 reference teaches that phenols such as those employed in the present invention:

For example, when the metal surface is treated with a vapor of a compound having only a phenolic hydroxyl group, such as p-cresol or phenol, the initial bonding strength of the obtained bonded structure is considerably low, and only when a surface-treating agent having not only a phenolic hydroxyl group but also a hydroxymethyl group is used, high bonding strength and a high bonding strength retention after the lapse of time can be obtained.

The Kitamura '354 reference also teaches that the bonded thin layer 18 containing the hydroxymethyl substituted phenol is much thinner than a conventional primer coating layer and has a thickness of 1 to 100 angstroms. (See column 10, lines 8-11.)

In the Applicants' invention as set forth in claim 1, the phenolic coating is one capable of spray application. In contrast, the hydroxymethyl substituted phenol disclosed in Kitamura '354 is applied by exposure to a hot air containing a vapour of hydroxymethyl substituted phenol in a suitable treatment furnace to effect vapour treatment (see column 6, lines 49-53). Furthermore, the Kitamura reference teaches that it is undesirable to spray coat or spray apply the hydroxymethyl substituted phenol onto the surface. "When a hydroxymethyl group containing phenol is spray-coated to the chromium-containing coating layer and is then subjected to a high-temperature treatment, even if a resin layer is formed on this treatment layer by hot melting, no strong bonding can be obtained. Only when a hydroxymethyl group containing phenol is applied in gaseous phase to the chromium-containing layer. . .[can] a strong durable bonding be formed. . ." (column 7, lines 38-50). For these reasons, it is submitted the Kitamura reference does not teach or suggest the primer materials employed in the present invention. It is also submitted that the Kitamura reference fails to teach or suggest that the primer layer is obtained by using a thickness obtainable by spray application. For these reasons, it is submitted that the invention as set forth in claim 1 is not taught, anticipated or rendered obvious by the cited references.

Claims 33, 34, 36-41 and 43-49 stand rejected under 35 U.S.C. § 103(a) as being rendered obvious by the Iorio reference taken in view of Kitamura. It is submitted that claims 33, 34, 36-41 and 43-49 depend from independent claim 1 to contain all of the limitations found therein. By this dependency it is submitted that the applicants' invention as set forth in claims 33, 34, 36-41 and 43-49 is not taught, anticipated, or rendered obvious by the cited references for the reasons discussed previously in conjunction with claim 1.

Claim 50 also stands rejected under 35 U.S.C. § 103(a) as being rendered obvious by Iorio in view of Kitamura. The Applicants' invention as set forth in claim 50 is directed to a multilayer tube comprising a metal tube having an outer surface, a zinc layer bonded to the outer surface of the metal tube, a surface treatment bonded to the zinc layer, and a primer layer comprising one or more phenols in which the primer layer is present in a thickness obtained by spray coating. Support for claim 50 as amended is found in the specification at page 19, lines 35-36. The multilayer tube further includes first and second polymeric layers overlying the primer layer.

As indicated previously in conjunction with claim 1, it is respectfully submitted that the Kitamura reference lacks any teaching or suggestion that would direct the skilled artisan to using a priming layer comprising one or more phenols present in a thickness obtained by spray coating. For this reason and for the reasons discussed previously in conjunction with claim 1, it is submitted that the applicants' invention as set forth in claim 50 is not taught, anticipated, or rendered obvious by the cited references.

Claims 51-61 stand rejected under 35 U.S.C. § 103(a) as being rendered obvious by the Iorio reference taken in view of Kitamura. It is submitted that claims 51-61 depend from independent claim 50 to contain all of the limitations found therein. By this dependency it is submitted that the applicants' invention as set forth in claims 51-61 is not taught, anticipated, or rendered obvious by the cited references for the reasons discussed previously in conjunction with claim 50.

Claims 1, 34, 40, 41, and 44-50 currently stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitamura '354 in view of Iorio. The Examiner indicates that the Kitamura reference discloses all of the recited structure with the exception of providing a plurality of polymeric layers to the treated metal plate formed into a pipe shape. The Examiner cites the Iorio reference as disclosing all of the structure set forth in Kitamura and states that it would have been obvious to one skilled in the art to modify the pipe in Kitamura by providing a plurality of polymeric layers to the outside of the treated metal pipe such as would provide further protection against corrosion, as suggested by Iorio.

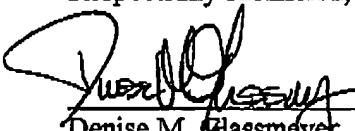
As indicated previously, it is submitted that the Kitamura '354 reference fails to teach or suggest the phenolic materials set forth in claim 1. Furthermore, it is submitted that the Applicants' invention as set forth in claim 50 is directed to a multilayer tube having a primer layer comprising one or more phenols in which the primer layer is present in a thickness obtained by spray coating. For these reasons, it is submitted that the Applicants' invention as set forth in claims 1, 34, 40, 41, and 44-50 is not taught, anticipated, or rendered obvious by the cited references.

Claims 33, 36-39, 43, and 51-61 currently stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kitamura '354 as applied to claims 1, 34, 40, 41, and 44-50, and in further view of Kobayashi. The Examiner contends that patent to Kitamura as modified discloses all of the recited structure with the exception of setting forth a specific type of phenol to use in the primer layer. The Examiner contends that the patent to Kobayashi discloses the recited coated metal plate formed into a pipe shape comprising a metal plate treated with zinc that can be chromate acid treated and further provided with a phenol layer that can be formed from specific phenols such as carbolic acid to further enhance the adhesion of polyamide connecting layers to form the pipe shape. The Examiner concludes that it would have been obvious to one skilled in the art to modify the phenols disclosed in Kitamura so as to employ carbolic acid as carbolic acid is an old and well-known phenol used to enhance adhesion of a polyamide layer to the treated plate to form a pipe shape as suggested by Kobayashi.

It is respectfully submitted that the Kobayashi reference fails to teach or suggest the use of simple phenols as set forth in the present invention. Rather the Kobayashi reference is directed to a bonded can having high hot water resistance. The can consists of a metal material having confronting side edges bonded together by a linear polyamide adhesive through an *epoxy-phenolic resin* undercoating composition. The epoxy-phenolic resin undercoating composition is composed of epoxy resins and a resol-type phenol aldehyde resin obtained by reacting a mixed phenol comprising a dihydric phenol. It is respectfully submitted that the Kobayashi reference teaches the use of an adhesive that includes a resol-type phenol-aldehyde resin. While various monohydric and dihydric phenols can be used to prepare the phenol-aldehyde resin, it is respectfully submitted that the Kobayashi reference fails to teach or suggest the use of a phenol material such as carbolic acid as a primer material. For these reasons, it is submitted that the Applicants' invention as set forth in claims 33, 36-39, 43, and 51-61 is not taught, anticipated, or rendered obvious by the cited references.

In summary, claims 1 and 50 have been amended. Arguments and discussion have been presented as to why the applicants' invention as set forth in claims 1, 33, 34, 36-41, and 43-61 is not taught, anticipated, or rendered obvious by the various cited references. In view of this action, it is submitted that the Applicants' invention as set forth in claims 1, 33, 34, 36-41, and 43-61 is in a condition suitable for allowance. Notice of allowance is, therefore, respectfully requested.

Respectfully submitted,



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